

- Fig. 14. *Pumilata princeps*, Kraep. Statoblast,  $\times 25$ . From Lake Haro, Chatham Island.
- Fig. 15. Ditto. Statoblast without swim-ring,  $\times 25$ .
- Fig. 16. *Beonia intermedia* (Hineks),  $\times 85$ . From Maunganui, Chatham Island.
- Fig. 17. Ditto.  $\times 25$ .
- Fig. 18. Ditto. Mandibles,  $\times 250$ . a  $\times 85$ .
- Fig. 19. *Beonia bilaminata* (Hineks). Opereulum,  $\times 85$ . D'Urville Island, New Zealand.
- Fig. 20. Ditto. Mandible,  $\times 85$ .
- Fig. 21. Ditto. Zocumen,  $\times 25$ .
- Fig. 22. *Beonia wogelliana* (Bask). Mandible,  $\times 85$ . From d'Urville Island, New Zealand.
- Fig. 23. *Smittia longirostris* (Jull.). Aperture, with rostrum below,  $\times 85$ . From Maunganui, Chatham Island.

III.—*Descriptions and Records of Bees.*—VII.

By T. D. A. COCKERELL, University of Colorado.

*Paracolletes hobartensis*, sp. n.

♀.—Length 12 mm.

Black, with black and greyish-white hair. Head broad, facial quadrangle very much broader than long; clypeus shining, with strong punctures, not very closely placed; anterior edge of clypeus with a fringe of straw-coloured hair; mandibles black, with a subapical dark reddish band; antennae dark, the flagellum whitish pruinose except at base; hair of middle of face scanty and pale, but at sides, especially above, and on vertex it is black; hair of mesothorax and scutellums black, and black beneath the wings, but otherwise light; mesothorax impunctate and very shiny in the middle, but otherwise punctate and duller, quite dull in front; scutellum shining in the middle, but coarsely sculptured along hind margin; postscutellum and area of metathorax dull, the latter with a median impressed line but no transverse keel; pleura dullish, with a subsericeous surface and no distinct punctures; tegulae shining black. Wings yellowish hyaline; stigma ferruginous, somewhat light-margined; nervures fuscous; b. n. meeting t.-m.; second s.m. narrowing above, receiving first r. n. at its middle; third s.m. receiving second r. n. very near its end. Legs black, with mostly pale hair, but the dense and abundant scopa on outer side of hind tibiae is black; the hind legs carry much light orange pollen. Abdomen pitch-black, dullish, practically nude above, and wholly without hair-

bands : on the venter there are white hair-fringes ; hair at apex black but small in amount.

*Hab.* Hobart, Tasmania (*J. J. Walker*, 3217).

Obtained on the 'Penguin' Expedition.

Close to *P. chalybeatus* and *P. obscurus*, but larger ; by the venation and the colour of the abdomen it is nearer to *chalybeatus*, by the colour of the stigma to *obscurus*. The Tasmanian *Paracolletes* of this group show much similarity (and no doubt real affinity) to some of the New Zealand forms.

*Paracolletes Worsfoldi*, sp. n.

♀.—Length about  $10\frac{1}{2}$  mm.

Black, with greyish-white and black hair, the second to fourth abdominal segments with conspicuous but narrow white hair-bands.

This is the species which I formerly regarded as *P. obscurus* (Sm.), but further studies have convinced me that it is distinct ; it differs from the description of *obscurus* principally by the banded abdomen, but also by the mandibles having only a dark ferruginous subapical ring, the hairy sides of face, and the hair on under (or inner) side of tibiae white. It is allied to *P. hobartensis*, from which it differs in the smaller size, banded abdomen, more closely punctured clypeus, greyish-white (instead of black) hair at sides of face ; also by the reddened last antennal joint (the antennae otherwise dark) ; the middle of mesothorax less shining and not wholly unsculptured ; the rufous tegulae ; the post-scutellum with wholly light hair ; the sides and anterior part of mesothorax with much light hair ; the black hair of scutellum and middle of mesothorax very coarsely plumose ; the abdomen hairy, especially the first segment ; the black hair at apex abundant ; and the venter covered with light hair. The hair of the vertex and outside of hind tibiae is black. The wings are dusky ; stigma very narrow, dark-margined with a reddish central streak ; b. n. meeting t.-m. ; second s.m. broad, receiving the first r. n. a little before its middle ; third s.m. receiving second r. n. a fair distance from its end.

*Hab.* W. Australia (*C. M. Worsfold*, 1903-368).

The labial palpi of *P. hobartensis* are large and dark (the first joint at least as long as the next two together) ; those of *P. Worsfoldi* are smaller and ferruginous.

*Paracolletes rudis*, sp. n.

♀.—Length 10 mm. or a little less.

Black, with the general form and appearance of *P. Worsfoldi*, the only conspicuous difference being in the lack of abdominal bands. Upon more minute examination many differences appear, namely: the mesothorax and scutellum are entirely dull and granular, with a honeycomb-like surface as seen with the compound microscope (*P. Worsfoldi* under the compound microscope shows a minutely tessellate surface, like a mosaic pavement, with conspicuous punctures as well); the abdomen is duller, with the hind margins of the segments obscurely reddish, those of the third and fourth segments also with fine appressed pale golden hairs, not dense enough to form distinct bands; the tegulae are piceous; the hair of the hind tibiae is entirely sordid white, except a blackish suffusion extending downwards from the knee-plate; the palpi are rufo-fuscous. Antennae ferruginous at tip; b. n. meeting t.-c.; second s.m. broad, receiving the first r. n. a little before its middle; third s.m. receiving the second r. n. almost as far from its end as the first r. n. is from the first t.-c.; area of metathorax granular, without a transverse keel or longitudinal impressed line; clypeus as densely punctured as is possible.

*Hab.* Swan River, Australia, 69.50.

Easily known from *P. obscurus* by the dull mesothorax.

*Paracolletes perfasciatus*, sp. n.

♀.—Length nearly 12 mm.

Black: the abdomen narrow, depressed, very shiny, with broad, entire, sordid white hair-bands covering the broadly depressed hind margins of segments 2 to 4, and one also at the base of 2: fifth segment covered with coarse black hair, except at the extreme sides, where it is white. Head broad; facial quadrangle very much broader than long; mandibles broad, black, dark ferruginous at apex, obscurely bidentate; antennae black, with the flagellum coffee-brown beneath, the apical joint redder; a short but distinct malar space, shining and punctured; clypeus shining, coarsely punctured; front shining and punctured at sides, dull and coarsely rugulose in middle; face with much white hair; hair of thorax mainly pale, but probably some black above as also on vertex (the pubescence is largely spoiled by wetting); mesothorax very shiny, with strong irregularly placed punctures; scutellum densely punctured: area of metathorax with the lower part

shiny, the upper roughly sculptured, with fine transverse lines in the middle, but no transverse keel; legs dark, with light hair; anterior tibiæ with a peculiar elongate, shining, bright ferruginous mark near the base in front; hind tibiæ with the hair all light, except a dark stain going part way down the outer edge; tegulæ piceous. Wings hyaline or very faintly dusky; stigma and nervures black, stigma small; b. n. meeting t.-m. on the outer side; first s.m. rather longer than the other two combined; second s.m. rather large, receiving the first r. n. a short distance from its beginning; third s.m. receiving second r. n. a short distance from its end; hind margin of first abdominal segment obscurely reddish; hind spur of hind tibia finely pectinate.

*Hab.* Western Australia, 68.6.

Not very close to any species.

*Paracolletes subfuscus*, sp. n.

♂.—Length about 13 mm.

Black, hairy, looking like a large *Colletes*, such as *C. cunicularius* (L.). Hair of head and thorax abundant, greyish white (a sort of very pale mouse-colour), but darker on the vertex, and strongly greyish fuscous all over the mesothorax; face densely covered with hair; facial quadrangle much longer than broad; no malar space; mandibles bluntly bidentate, black, with a dark red subapical spot; antennæ long, black, the flagellum brownish beneath, with some red on the underside of the last two or three segments; disk of mesothorax shining, with sparse punctures; area of metathorax smooth and very shiny, with no impressed longitudinal line or transverse keel. Legs rather dark ferruginous, covered with pale hair; the femora blackish; the hind tibiæ quite bright red in front; spurs ferruginous; tegulæ rufous. Wings hyaline, nearly clear; stigma and nervures dark reddish; stigma so small as to be practically obsolete; wings hairy; b. n. meeting t.-m. on the outer side; second s.m. very broad, oblique, not narrowed above, receiving the first r. n. at its middle; third s.m. receiving the second r. n. at its end. Abdomen subconical, shining but punctured, each segment having a broad, subapical, reddish band, upon which is a thin band of quite long, closely appressed, pallid hairs, which shine golden in some lights, the whole effect closely resembling the abdomen of some forms of the honey-bee; last segment with a bright ferruginous subapical spot, and on each side of this some short black hair; venter normal; the last segment with a faint median ridge.

*Hab.* Adelaide, Australia, 63.82.

*Paracolletes thornleighensis*, sp. n.

♂.—Length a little over 7 mm.

Black, quite hairy, especially on the head and thorax. Face densely covered with light yellowish hair; hair of cheeks yellowish white, but of vertex and occiput, of mesothorax except in front, and of the scutellums for the most part nigro-fuscous; hair of thorax otherwise greyish white and of legs dull white; facial quadrangle as broad above as its length, but eyes converging below; mandibles black, with a faintly reddish subapical spot; vertex punctured, but a broad space on each side of ocelli is impunctate and very shiny; flagellum dark brownish and crenulate beneath; mesothorax and scutellum shining, with distinct scattered punctures; area of metathorax smooth and very shiny, with an impressed longitudinal line, but no transverse keel; legs brown-black; spurs yellowish white; tegulae rufo-piceous. Wings hyaline, iridescent, the stigma and nervures sepia-brown; stigma rather large; b. n. curved and falling a little short of t.-m., which is very oblique; second s. m. twice as broad below as above, receiving first r. n. a little beyond its middle; third s. m. receiving second r. n. a short distance from its end. Abdomen shining and strongly punctured, with the apical margins of the segments depressed and more or less reddened; the short erect hair of the abdomen is pale about as far as the middle of the third segment, after that black or grey-black; the apical half has long pale hairs showing at the sides, but they are attached to the ventral surface; genitalia peculiar, seen from above they present a pair of very large approximately hemispherical plates, not contiguous; behind these are the strongly divergent stipites, with hairy ends; between these is a dark object something like the head of a nail, with a slender stem, which consists of the sagittae, apparently completely fused. The tongue is very broad, ferruginous, with the apical margin gently convex, not at all emarginate, and beset with minute protuberances. Palpi normal.

*Hab.* Thornleigh, Australia (*Froggatt*); 1890. 91. They bear the collector's number 32.

Two specimens. The tongue of this species offers what looks like a transition between the Colletid and the Halictid types, though properly belonging to the former.

The forms of *Paracolletes* (sens. lat.) described in this

series of papers may be readily separated by means of the following table:—

|   |  |
|---|--|
| Abdomen ferruginous red, with a black spot on each side of second segment; second submarginal cell very small . . . . .   | <i>bimaculatus</i> (Smith).                  |
| Abdomen not ferruginous red . . . . .   | 1.   |
| 1. Scutellum covered with long dense fulvous-yellow hair, contrasting with the surrounding parts; hair of mesothorax black . . . . .  | <i>flavomaculatus</i> , Ckll., ♂*.           |
| Not so . . . . .  | 2.   |
| 2. Abdomen distinctly metallic, with blue, green, or purple (very obscurely so in <i>P. obscuripennis</i> ); size small or medium . . . . .   | 3.   |
| Abdomen not (or hardly) metallic (slightly so in <i>P. obscuripennis</i> ) . . . . .  | 9.   |
| 3. Thorax green or blue . . . . .   | 4.   |
| Thorax black; colours of abdomen never brilliant . . . . .  | 6.   |
| 4. Abdomen crimson-purple and brassy; flagellum ferruginous beneath except at base; stigma rather large, amber-colour . . . . .   | <i>cupreus semipurpureus</i> ,<br>[Ckll., ♀. |
| Abdomen very dark purple; thorax dark green; flagellum all dark . . . . .   | <i>plumosellus</i> , Ckll., ♂.               |
| Abdomen blue, with green tints; narrow and very strongly punctate . . . . .   | <i>caeruleotinctus</i> , Ckll., ♂.           |
| Abdomen olive-green . . . . .   | 5.   |
| 5. Second recurrent nervure joins third submarginal cell before end; area of metathorax with no sharp transverse keel . . . . .   | <i>amabilis</i> (Sm.), var., ♀.              |
| Second recurrent nervure joins third submarginal cell at end; area of metathorax with a sharp transverse keel . . . . .   | <i>carinatus</i> , Ckll., ♂.                 |
| 6. Abdomen black, with the broadly depressed hind margins of the segments olive-green; much black hair on vertex, mesothorax, and apex of abdomen; antennæ entirely black . . . . . | <i>viridictinctus</i> , Ckll., ♀.            |
| Hind margins of abdominal segments not green . . . . .  | 7.   |
| 7. Wings strongly dusky, with purple tints; abdomen hardly metallic . . . . .   | <i>obscuripennis</i> , Ckll., ♀.             |
| Wings clear . . . . .   | 8.   |

\* When describing *P. flavomaculatus* I omitted to call attention to its close resemblance to *P. cristatus* (Smith), which is known only in the female. The two may be sexes of one, but the type of *flavomaculatus* belonged to Smith, and he did not label it *cristatus*. I have not seen the type of *cristatus*; it is not at the British Museum, but probably at Oxford. I visited the Oxford University Museum, but was not able to ascertain the whereabouts of the type bees presumed to be there.

8. Larger; hind margins of abdominal segments not reddish . . . . . *spatulatus*, Ckll.  
 Smaller; hind margins of abdominal segments reddish . . . . . *provialis*, Ckll.
9. Antenna hooked at end; scape red; abdomen with golden pile . . . . . *maritimus*, Ckll.  
 Antenna normal at end; scape not red. . . . . 10.
10. Flagellum bright ferruginous beneath; face covered with yellow hair; first recurrent nervure joining second submarginal cell near its beginning . . . . . *colletellus*, Ckll.  
 Flagellum not so . . . . . 11.
11. Stigma and nervures amber-colour; sides of face with black hair; legs dull reddish . . . . . *semilatus*, Ckll.  
 Stigma and nervures darker . . . . . 12.
12. Sides of face with black hair . . . . . 13.  
 Sides of face without black hair . . . . . 15.
13. Face densely covered with light yellow hair, except at sides above . . . . . *obscuripennis*, Ckll.  
 Face without such yellow hair . . . . . 14.
14. Larger, about  $12\frac{1}{2}$  mm. long; tegulae black . . . . . *hobartensis*, Ckll.  
 Smaller; tegulae dark brown (Grey mouth, New Zealand, *Kaibetsu*; ♂  $\frac{1}{4}$  in U.S. National Museum) . . . . . *vestitus* (Smith).
15. First r. n. joining second s.m. near its beginning; abdomen with hair-bands. *perfasciatus*, Ckll., ♀.  
 First r. n. joining second s.m. near its middle or before middle, but not very near beginning . . . . . 16.
16. Area of metathorax dull . . . . . 17.  
 Area of metathorax shining . . . . . 18.
17. Scutellum shining . . . . . *Worsfoldi*, Ckll.  
 Scutellum dull and roughened . . . . . *rutis*, Ckll.
18. Large, about 13 mm. long; *Colletes*-like; abdomen hairy . . . . . *subfuscus*, Ckll.  
 Small; stigma sepia-colour; abdomen strongly punctate . . . . . *thorneighensis*, Ckll.

IV.—Notes on some Genera of the Crustacean Family Hippolytidae. By W. T. CALMAN, D.Sc., British Museum (Natural History).

In attempting recently to refer to its appropriate genus a species of Hippolytidae obtained by the 'Discovery,' I found it necessary to re-examine the characters of the existing genera of the family so far as these are represented in the Museum collections. Some of the results seem to be of sufficient importance to warrant the publication of the